

NOTE

Observations on the Reproductive Behavior of Two Neotropical
Robber Fly Species (Diptera: Asilidae)

Most ethological research on adult robber flies has centered on the predatory behavior of north temperate species. Here I present some observations on the reproductive behavior of two neotropical asilid species. All observations were made in 1981 within the forest of Barro Colorado Island, Panama. Complete geologic, climatic, and floristic descriptions of Barro Colorado are given in Croat (1978. *Flora of Barro Colorado Island*, 943 pp.).

OBSERVATIONS OF *SENOBASIS CORSAIR* BROMLEY

The genus *Senobasis* (subfamily Dasypoginae) includes 17 described species all of which are neotropical in distribution (Papavero, 1975. *Arq. Zool.* 26: 191-318). *Senobasis corsair* has previously been reported from Panama, Colombia, and Costa Rica (Papavero, loc. cit.), but published behavioral observations are completely lacking. Females are slightly larger than males; for 5 males and 5 females, the mean body lengths were 18.3 mm and 19.1 mm, respectively. Both sexes possess black legs, a black face, a predominately bluish-black mesonotum, and brown wings which produce violaceous reflections. However, the sexes differ with respect to abdominal color. With the exception of narrow whitish bands on tergites 2 and 3, the female's abdominal tergites are completely black. In males, on the other hand, only tergites 1 and 5-7 are black, while tergites 2-4 are completely white.

Matings were observed on four different occasions between May 3-May 14 and were similar in each instance. Courtship appears to be absent; in each case a flying male simply pounced upon a perching female, and copulation followed immediately. When foraging, both sexes typically perch on horizontal branches with their wings resting directly over the abdomen. When in the end-to-end position, however, only the female maintains this typical perching posture. After coupling with the female, the male hangs vertically (head downward) behind the female. The male grips the branch with all its legs and is further supported by the female's weight, which is shifted slightly forward during copulation. While in this vertical position, the male also holds each wing at approximately a 45° angle to the body thus exposing the white segments of the abdomen. Copulations lasted 50-135 min and were apparently terminated by the male who, in each case, suddenly disengaged and flew off.

For a male in copulo, the vertical position, the violaceous reflections of the wings, and the contrasting black and white tergites collectively create an unusual visual effect. As an initial hypothesis, I suggest that this visual effect may serve to confuse predators (e.g. birds) and thus reduce the risk of predation during the rather lengthy copulation. This lowered risk might result from either a predator's failure to recognize the mating pair as potential prey or a reduction in the speed and/or accuracy of an attempted capture. The validity of this "predator confusion" hypothesis, of course, still requires experimental verification.

Following one copulation, the female was captured, returned to the laboratory, and placed in a plastic container. Approximately 48 h later, eight eggs were found on a side of the container. The eggs were laid more or less end-to-end in a straight line, and adjacent eggs were firmly stuck together. The eggs were grayish-black, elongate ovals with an average length of 1.4 mm (range: 1.2–1.5) and an average width of 0.55 mm (range: 0.5–0.7). No surface ridges or sculpturing were apparent under a light microscope (430 \times). No hatching occurred after 7 days at which time the eggs were preserved. Although oviposition was not observed in the field, a female was seen walking slowly on bare ground for approximately 45 minutes. Her abdomen was held above ground during most of this time, but during 5 short intervals (5–15 s) she lowered the tip of her abdomen to the ground and moved it back and forth slowly over the surface. These 5 sites were examined and then excavated, but no eggs were found.

AN OBSERVED OVIPOSITION AND THE EGGS OF
PROMACHUS ANCEPS OSTEN SACKEN

Although *Promachus* is a large (approximately 250 species; Hull 1962) cosmopolitan genus, oviposition and eggs have been described for only a few species (Felt, 1915, N.Y. State Mus. Bull. 175: 24–26; Davis, 1919, Bull. Nat. Hist. Sur. Ill. 13: 53–138; Lavigne and Holland, 1969, Univ. Wyo. Agric. Exp. Stn. Sci. Monogr. 18: 1–61). *Promachus anceps* has previously been reported from Panama and Mexico (Osten Sacken, 1887, Biologia-Centrali Americana, pp. 167–213), but there are no published accounts of its biology. On June 23 at approximately 1045 h, a female was observed walking along a fallen, dead branch that was suspended about 2 m above ground by some other branches. Apparently searching for a suitable site, the female stopped frequently and “tested” the branch surface with her ovipositor. To do so, she curled the tip of her abdomen forward and made distinct probes while simultaneously moving it from side to side. After making 15–20 such “tests” (each lasting 2–3 s), she reached one end of the branch and, finding it hollow, turned around and inserted her curled abdomen into the opening. She remained in this position for approximately 30 s after which she flew off and was lost from view.

Examination of the stick revealed that, while no eggs were laid on the surface, 20 eggs had been deposited in the open end. The eggs were pale white, elongate ovals with an average length of 1.55 mm (range: 1.4–1.65) and an average width of 0.5 mm (range: 0.4–0.55). The eggs were arranged in two adjacent rows, and neighboring eggs were cemented together. The whole egg mass was 7.9 mm long and 0.9–1.1 mm wide (these latter values corresponding to the diameter of the hollow groove) and was 5.1 mm from the end of the stick. No surface ridges or sculpturing were apparent under a light microscope (430 \times). No hatching occurred after 13 days at which time the eggs were preserved.

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